

From: [McCarter, Jennifer](#)
To: [Jacobson, Linda](#)
Cc: [Bailey, Treasure](#); [Churchill, Stephen](#); [Muller, Sheldon](#); [Pearson, Janice \(she/her/hers\)](#); [jill.parisi](#); [Bloomberg, Jon H](#); [Kilty, Quinn V](#)
Subject: [WARNING: MESSAGE ENCRYPTED]RE: request for additional information
Date: Thursday, July 1, 2021 1:06:05 PM
Attachments: [Comanche Station CCR Groundwater Monitoring System Certification Rev. 2 App. B.pdf](#)

Attached Appendix B. This is the last of the groundwater system certification update. I'll let you know when the document has posted to our CCR website so you will be able to download it as a single file.

Jennifer McCarter, R.E.M.

Xcel Energy

Environmental Analyst

Environmental Services Department

1800 Larimer St., Suite 1300, Denver, CO 80202-1414

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E: jennifer.mccarter@xcelenergy.com

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Please consider the environment before printing this email

From: McCarter, Jennifer

Sent: Thursday, July 1, 2021 12:38 PM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Cc: Bailey, Treasure <Bailey.Treasure@epa.gov>; Churchill, Stephen <Churchill.Stephen@epa.gov>; Muller, Sheldon <Muller.Sheldon@epa.gov>; Pearson, Janice <pearson.janice@epa.gov>; Parisi - CDPHE, Jill <jill.parisi@state.co.us>; Bloomberg, Jon H <Jon.H.Bloomberg@xcelenergy.com>; Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Attached Appendix A, pages 8-10

Jennifer McCarter, R.E.M.

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Please consider the environment before printing this email

From: McCarter, Jennifer

Sent: Thursday, July 1, 2021 12:34 PM

To: 'Jacobson, Linda' <Jacobson.Linda@epa.gov>

Cc: 'Bailey, Treasure' <Bailey.Treasure@epa.gov>; 'Churchill, Stephen' <Churchill.Stephen@epa.gov>; 'Muller, Sheldon' <Muller.Sheldon@epa.gov>; 'Pearson, Janice' <pearson.janice@epa.gov>; 'Parisi - CDPHE, Jill' <jill.parisi@state.co.us>; Bloomberg, Jon H <Jon.H.Bloomberg@xcelenergy.com>; Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Attached Appendix A, pages 1-7

Jennifer McCarter, R.E.M.

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From: McCarter, Jennifer

Sent: Thursday, July 1, 2021 12:32 PM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Cc: Bailey, Treasure <Bailey.Treasure@epa.gov>; Churchill, Stephen <Churchill.Stephen@epa.gov>; Muller, Sheldon <Muller.Sheldon@epa.gov>; Pearson, Janice <pearson.janice@epa.gov>; Parisi - CDPHE, Jill <jill.parisi@state.co.us>; Bloomberg, Jon H <Jon.H.Bloomberg@xcelenergy.com>; Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Attached is the text of the updated Groundwater System Certification. Due to file size, I'll send the Appendices in three additional emails.

Jennifer McCarter, R.E.M.

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Please consider the environment before printing this email

From: McCarter, Jennifer

Sent: Thursday, July 1, 2021 12:28 PM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Cc: Bailey, Treasure <Bailey.Treasure@epa.gov>; Churchill, Stephen <Churchill.Stephen@epa.gov>; Muller, Sheldon <Muller.Sheldon@epa.gov>; Pearson, Janice <pearson.janice@epa.gov>; Parisi - CDPHE, Jill <jill.parisi@state.co.us>; Bloomberg, Jon H <Jon.H.Bloomberg@xcelenergy.com>; Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Hi Linda, Attached is the updated data table with the results of the April 2021 groundwater sampling event. I'll be sending the updated Groundwater System Certification shortly.

Jennifer McCarter, R.E.M.

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Please consider the environment before printing this email

From: McCarter, Jennifer

Sent: Monday, June 21, 2021 9:07 AM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Subject: RE: request for additional information

Hi Linda, I did talk with HDR last week about the GW system cert and am expecting a final draft for my review today. I'll also check today on the status of the updated data tables, and try to give you a firm ETA for both of these deliverables.

Sincerely,

Jennifer McCarter, R.E.M.

Xcel Energy

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Please consider the environment before printing this email

From: McCarter, Jennifer

Sent: Friday, June 11, 2021 4:35 PM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Cc: Bailley, Treasure <Bailley.Treasure@epa.gov>; Churchill, Stephen <Churchill.Stephen@epa.gov>;

Muller, Sheldon <Muller.Sheldon@epa.gov>; Bloomberg, Jon H

<Jon.H.Bloomberg@xcelenergy.com>; Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Hi Linda, our responses to your additional questions are in blue text below. We have completed the updated statistical background memo, but it is an exceptionally large file (48 mb) due to the lab reports attachment. So, I extracted the text and figures so I could send via email. I'll let you know when the full document is on the website so you can download it from there for your records. We're working on some edits to the Groundwater System Certification, but still hope to get that to you next week. Also the data tables updated with the first assessment monitoring event in April should be available end of next week.

Sincerely,

Jennifer McCarter, R.E.M.

Xcel Energy

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Please consider the environment before printing this email

From: Jacobson, Linda <Jacobson.Linda@epa.gov>

Sent: Thursday, June 10, 2021 12:21 PM

To: McCarter, Jennifer <jennifer.mccarter@xcelenergy.com>

Cc: Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

EXTERNAL - STOP & THINK before opening links and attachments.

From: McCarter, Jennifer <jennifer.mccarter@xcelenergy.com>

Sent: Thursday, June 10, 2021 11:37 AM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Cc: Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Hi Linda, I wanted to provide an update and apologize for the slight delay. I wanted to be able to provide as complete information as possible in response to your questions. I expect to have a response to you end of day tomorrow, including the background statistical certification. I'll follow up with the groundwater system certification next week.

Sincerely,

Jennifer McCarter, R.E.M.

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Please consider the environment before printing this email

From: McCarter, Jennifer

Sent: Thursday, June 3, 2021 6:08 PM

To: Jacobson, Linda <Jacobson.Linda@epa.gov>

Cc: Bailley, Treasure <Bailley.Treasure@epa.gov>; Churchill, Stephen <Churchill.Stephen@epa.gov>;

Muller, Sheldon <Muller.Sheldon@epa.gov>; Bloomberg, Jon H

<Jon.H.Bloomberg@xcelenergy.com>; Kilty, Quinn V <quinn.v.kilty@xcelenergy.com>

Subject: RE: request for additional information

Hi Linda, I wanted to acknowledge I received your email. Many of the answers will be in the documents that are pending completion, but we will provide a brief response to your questions in the email and will work on getting that to you ASAP, hopefully by early next week. I have reviewed the final draft of the Background Statistical Certification Report and it is in final production with HDR. I would expect that also by early next week. I know that HDR is working on the updated Groundwater System Certification and have asked them to provide me a schedule for anticipated completion, which I also expect to be relatively near term.

Sincerely,

Jennifer McCarter, R.E.M.

Xcel Energy

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Please consider the environment before printing this email

From: Jacobson, Linda <Jacobson.Linda@epa.gov>

Sent: Thursday, June 3, 2021 11:40 AM

To: McCarter, Jennifer <jennifer.mccarter@xcelenergy.com>; Kilty, Quinn V

<quinn.v.kilty@xcelenergy.com>; Bloomberg, Jon H <Jon.H.Bloomberg@xcelenergy.com>

Cc: Bailley, Treasure <Bailley.Treasure@epa.gov>; Churchill, Stephen <Churchill.Stephen@epa.gov>;

Muller, Sheldon <Muller.Sheldon@epa.gov>

Subject: request for additional information

Hi Jennifer,

Thank you for your recent emails. We have identified additional information needs.

We have not yet seen the groundwater system certification required pursuant to 40 C.F.R. § 257.91(f) for Comanche Station and have a few questions to ensure the groundwater monitoring system required pursuant to 40 C.F.R. § 257.91(a) has been designed and constructed to meet the requirements of the section, including 40 C.F.R. § 257.91(a)-(c). From the documentation that has been provided thus far, we have made some observations and would appreciate explanations regarding some of the data presented.

Groundwater system certification:

Please include documentation demonstrating that all § 257.91(a-c) requirements have been met, including a demonstration that background wells accurately represent the quality of background groundwater (§ 257.91(a)(1)); that all potential contaminant pathways are being monitored at the waste boundary of each CCR unit (§ 257.91(a)(2)); that the monitoring system (number, spacing, and depths) is thoroughly characterized, including aquifer thickness, groundwater flow rates and direction, and fluctuations in groundwater flow (§ 257.91(b)); and that the monitoring system meets the minimum requirements necessary to meet the performance standards specified in § 257.91(a) (§ 257.91(c)). [The updated groundwater monitoring system certification includes all of this information, including background water quality, all contaminant pathways, complete characterization of the saturated thickness, flow rates and direction, and meets the minimum requirements and performance standards of the CCR Rule. The thickness of the groundwater unit above the consolidated shale ranges from less than one foot to just under 25 feet.](#)

Potentiometric surface maps:

Please identify which wells are being used to develop the potentiometric surface maps. Past presentations have differentiated between the “perched” and “weathered bedrock” groundwater surfaces, and the cross-sections display both perched and weathered bedrock groundwater surfaces. However, the potentiometric surface maps included in the 2020 Annual Groundwater Monitoring and Corrective Action Report appear to incorporate groundwater elevations from “perched” wells in the uppermost aquifer potentiometric surface. [The potentiometric surface map was updated with January 2021 weathered bedrock water levels. The perched water shown in the cross-sections beneath the pond was included to illustrate the water levels in the colluvial wells. When potentiometric surface maps with perched water levels are included it is to represent potential variability at different points in time.](#)

Background samples:

Has Xcel tested for autocorrelation or statistical independence to verify that enough time elapsed between sampling events during the accelerated background sampling campaign? Examples of tests for autocorrelation or other statistical dependence can be found in Chapter 14 of EPA’s Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, 2009. If such evaluation has been performed, please provide the results to EPA. If not, please evaluate temporal autocorrelation among sample results from each new well using autocorrelation methods identified in Chapter 14 of the Unified Guidance (e.g. Darcy’s equation, first-order autocorrelation function, rank von Neumann ratio). [Sources for serial correlation in groundwater samples can be due to temporal effects \(i.e., autocorrelation\) or seasonal effects \(i.e., seasonality\), and HDR tests for both. To test for temporal correlation we use the autocorrelation function \(also known as the Ljung–Box test\) to test if the data are correlated for each constituent of interest. For both the BAP and the landfill, no evidence of serial correlation was exhibited for the majority of the constituents. Since we are testing for many constituents and all constituents were sampled at the same time, evaluation of the](#)

correlation of the sampling events early in the monitoring program with lower number of data points should be based on the majority of the results. We will continue monitoring the background data and as more samples are collected, we will continue to evaluate for serial correlation.

Identification of SSIs:

Have the identified SSIs been verified by resamples? What statistical method was used to determine BTVs? The statistical methods for detection monitoring and assessment monitoring were Upper Prediction Limits. BTVs for development of GPS are based on Upper Tolerance Limits. We did not resample since the concentrations in wells with SSIs were fairly consistent throughout the duration of the background monitoring period. However, we will re-evaluate for SSI's based on the April 2021 sample results.

Alternate source determination:

In your May 13, 2021 email you indicated that Xcel is evaluating potential alternate sources for the SSIs. Please identify the potential alternate sources that are being considered. At the landfill, there was a single SSI for calcium in MW-4B. However, this well appears to be up/cross-gradient, and we do not believe the calcium concentration is from the landfill. At the impoundment, there was an SSI for pH in seven wells and for boron in W-1 and W-6; we want to rule out potential other source(s) such as the non-CCR ponds and potential leaching of constituents that are present naturally in the colluvium.

Update of Location Restriction Criteria assessment:

Based on the data that Xcel Comanche has provided to EPA over the last several months, we believe that Section 2.1 of the October 2018 *Location Restriction Criteria – Certification Report* should be updated to more accurately reflect the current understanding of the relevant information, including the location of the uppermost aquifer. We agree and have requested HDR to update this document.

We appreciate your continuing cooperation and responsiveness.

Linda Jacobson
Region 8 EPA